SECURITY MESSAGING SYSTEM

BACKGROUND OF THE INVENTION

5   The invention relates to a comprehensive system and method for managing safety and security in commercial and residential buildings. The system is relevant to normal activity and alarm conditions including but not limited to door openings, system arming, system disarming, temperature changes, moisture changes in addition to break-in, medical and fire alarms. This system
10   includes multiple alarm sensors in communication with one or more control systems that interface by means of the World Wide Web to external peripheral devices. Users of security systems want the ability to receive messages such as alarms, system status, opening and closings, etc., to their work and home email addresses, cell phones, and other PDA's and personal messaging
15   devices such as Blackberries. A good example is receiving a notification when the children of the user arrive home from school and disarm the system or when an alarm occurs. The end user may desire messages that need not be sent to a central monitoring station supervised by trained personnel that have a primary mission of dispatching fire and/or police personnel when the data
20   transmitted to the central monitoring station indicates to them that such action is appropriate. A perfect example here is a water/leak sensor whose fault can be transmitted to the homeowner, without the risk of accidentally dispatching police and/or fire responders.

25   A United States patent application serial number 10/364,909, entitled Universal Gateway Module and having the same assignee as the present application was filed on December 18, 2002. This application describes novel approaches to interfacing peripheral devices to one or more control systems. This application is incorporated herein by reference.
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The prior art includes the ALARMNET® family of communication services provided by Ademco Group, Syosset, NY and designed for the security industry. Types of services include both wireless and Internet based network services. These services are independent; however, a network control center
35   allows messages received from one network to be redirected over another

network. The wireless services are identified as ALARMNET-A, ALARMNET-M, and ALARMNET-C. The Internet service is identified as ALARMNET-I. The present invention utilizes these networks in addition to other communication networks.

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The prior art includes various systems relying on cameras in the protected premises that are coupled by the Internet to allow remote observation of the premises.

10 SUMMARY OF THE INVENTION

It is an object of the present invention to provide a more comprehensive system and method for managing security in commercial and residential buildings.

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Another object of the present invention is to allow users of security systems the ability to receive messages such as alarms, system status, door and window opening and closings, etc. to their work and home e-mail addresses, cell phones, and other PDA (personal digital assistant) devices in personal

20 messaging devices such as BLACKBERRY® wireless devices.

Still another object invention is to provide a mechanism for directing at least some alarm conditions directly to such external peripheral devices and thus avoid the expense inherent in central station alarm condition monitoring by

25 humans and the risks of one intentional dispatching of police and/or fire responses.

Yet another, object invention is to provide a system at extremely low cost and minimizes the necessity to purchase equipment. More particularly, it is an

30 object of the present invention to do this without the need for a TCP/IP stack and/or Ethernet Adapter.

It has now been found that these and other objects of the invention may be achieved in a system and a method for delivering safety and security

35 information which includes at least one event monitor. Each event monitor

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has an output. The system also includes apparatus for predetermining criteria for sorting the outputs of respective event monitors, apparatus for predetermining the format of a message related to respective events, apparatus for receiving the respective outputs of each of the event monitors and apparatus for sorting the outputs, based on the predetermining criteria for sorting the outputs, into categories related to distinct channels of communication, in addition to apparatus for delivering messages based on the predetermined criteria and predetermined format.

In some forms of the invention the apparatus for predetermining criteria for sorting the outputs of respective event monitors includes a web site accessible by an end-user. Similarly, the apparatus for predetermining the format of a message includes a web site accessible by an end user. The web site may be accessible only with a predetermined username and password.

The apparatus for predetermining criteria for sorting the outputs of respective event monitors may include a plurality of communication channels selected from the group comprising radio frequency transmissions, e-mail, text messaging, instant mail, pager, mobile phone, and wireless PDAs in addition to a central-station for processing the most serious events. The apparatus may also include a central-station for processing the most serious events.

Some forms of the system include at least one event monitor having an output, apparatus for predetermining criteria for sorting the outputs of respective event monitors, apparatus for receiving the respective outputs of each of the event monitors and apparatus for sorting the outputs, based on the predetermining criteria for sorting the outputs, into categories related to distinct channels of communication; and apparatus for delivering messages based on the predetermined criteria.

In such forms of the invention the apparatus for predetermining criteria for sorting the outputs of respective event monitors may include a plurality of communication channels selected from the group comprising radio frequency transmissions, e-mail, text messaging, instant mail, pager, mobile phone, and

wireless PDAs in addition to a central-station for processing the most serious events.

The method in accordance with the present invention may include providing at least one event monitor having an output, predetermining criteria for sorting the outputs of respective event monitors, predetermining the format of a message related to respective events, receiving the respective outputs of each of the event monitors and sorting the outputs, based on the predetermined criteria for sorting the outputs, into categories related to distinct channels of communication, and delivering messages based on the predetermining criteria and predetermined format.

In some forms of the method the step of predetermining criteria for sorting the outputs of respective event monitors includes providing a web site accessible by an end-user. The step of predetermining the format of a message may include providing a web site accessible by an end user. In some cases the step of predetermining may include limiting access to the web site only with a predetermined username and password.

The step of predetermining criteria for sorting the outputs of respective event monitors may include the step of providing a plurality of communication channels selected from the group comprising radio frequency transmissions, e-mail, text messaging, instant mail, pager, mobile phone, and wireless PDAs in addition to a central-station for processing the most serious events.

BRIEF DESCRIPTION OF THE DRAWING

The invention will better understood by reference to the drawing which is a diagrammatic representation of one form of the system and method in accordance with the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

A security system in a protected premise sends a Contact ID message (or any other type of alarm message format), that uniquely identifies the

premises and customer and the relevant events at that premises. The Contact ID message is an industry-standard alarm equipment event reporting format. The message is sent by means of a telephone line connected to a modem (that is one of a bank of modems or equivalent) at a central station or by means of a dial-up or broadband Internet access. Examples of broadband Internet access include Symphony-I and 7845i provided by Ademco Group, Syosset, NY. The central system may be fully automated whereby each of a predetermined list of inputs will each produce a predetermined output to the specific end user by means of that end users personal messaging device, cell phone by means of the World Wide Web or other communication channel using SMTP or equivalent. The central station will process the events for relatively routine events to direct the Contact ID message to the personal messaging device or cell phone previously selected by the user. The user is able to manage the personal messaging device or cell phone as well as the event categories that will be directed to the personal messaging device or cell phone by means of a web site.

The messenger system in accordance with one form of the present invention may be located at the Central Station where personnel monitor incoming data and selectively dispatch fire, police and medical emergency responders. In other forms of the present invention the messenger system may be separated physically from the Central Station. In such embodiments of the present invention the messenger system includes fire, police, and medical response events as well as arming, disarming, temperature changes, moisture changes, door openings, door closings etc. In other forms of the invention the messenger system functions independently of (although harmoniously with) the conventional fire, police and medical emergency aspects and is limited to events that do not require the dispatch of fire, police or medical responders.

The user may at any time access their personal Messaging account at the central station via the web (i.e., Symphony account) and manage their database of email addresses and control how the Contact ID messages are directed as described above.

The following more detailed description of the system is best understood by first considering the following glossary of terms used herein.

OBJECTS AND ITEMS

5   Address List — A list of Electronic Mail, Instant Messenger, or other unique identifiers that may be used to distribute event messages.

Alarm Panel or Alarm System — Equipment installed in a building or outdoor space that detects undesired access, entry, occupation, or the presence of a hazard (ex. - fire or presence of lethal gasses), or the occurrence of an event

10   within a designated space.

Alarm Monitoring Central Station — An entity that is employed to collect event messages from protected premises. Most often, police, fire, or other emergency personnel are dispatched to the appropriate location in response to the reception of events.

15   AlarmNet — A communications network operated by Ademco that uses Internet, Cellular, Mobitext, and other proprietary technologies. The network is used to upload and download alarm system configuration and operational data as well as act as a pathway for alarm system based events to be routed from the protected premises to an alarm monitoring central station.

20   MS — Messenger System. An electronic computing system that can create and send electronic forms of messages to persons (or foreign systems) in order to notify the recipient of undesired access, entry, occupation, or the presence of a hazard (ex. - occurrence of fire or presence of lethal gasses), or the occurrence of an event within a designated space.

25   CID — Contact ID, an industry-standard alarm equipment event reporting format.

End User — Owner/Manager of the property in which an alarm system is installed.

Event — The detection of a change in the protected premises. Often, the

30   event may be stored in some form of non-volatile memory. Events are usually transmitted to an Alarm Monitoring Central Station.

PC — Personal Computer

System Administrator – Personnel employed by an Alarm Installation, Alarm Monitoring, or Alarm Manufacturer organization that has been assigned to perform system data maintenance.

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The diagrammatic representation of the present invention includes the following communications links:

A   broadband or dial-up into Internet point-of-presence

AA   outgoing e-mail requests

10 B   secure CID events to Alarmnet via network

BB   outgoing instant Mail requests

C   non-secure CID events to messenger service by a network .

CC   bi-directional communication

D   non-secure CID events to messenger service by a network

15 DD   event notification

E   non-secure CID events to messenger service via Dial-up into Internet point-of-presence

F   ECP proprietary Enhance Communication Protocol

FF   RS-232 or TCP/IP

20 EE   RS-232 or TCP/IP

G   ECP or RS-232

GG   RS-232 or TCP/IP

H   RS-232

HH   event notification

25 I   non-secure events to messenger service via dial-up into the messenger system using industry-standard protocols

II   event notification

J   non-secure events to messenger service via dial-up into messenger service at 75 baud or higher

30 JJ   account configuration data input

K   in/out messages

KK   account configuration data input

L   in/out messages

LL   Alarmnet-C

M	radio network
MM	Alarmnet-M
N	incoming secure event reception
NN	Alarmnet-A
O	uni-directional communication
P	bi-directional communication
R	telephone line
S	telephone line
T	telephone line
U	Internet instant message delivery
V	Internet e-mail delivery
W	outgoing instant message
X	outgoing e-mail
Y	incoming non-secure event reception
Z	incoming Web based activity

The alarm system end user of the system in accordance with the present invention creates a Messenger System MS Account. Account creation is performed upon a standard personal computer 1 with an industry standard Web Browser through the Internet 15 via an internet connection A. The end user logs into a public web site (hosted on the web site 30). A password and login name provided by the security system installer is used by the end user. The web site 30 is exposed to the Internet 15 via a public IP address. Web pages are served by the web server 30 via the internet connection (from the web site 30 to the personal computer 1 via Internet connection A, Internet 15, and incoming Web based activity Z). Messenger System MS account information is stored within the Messenger System Database 33. Account information is requested by the web-site 30 dynamic content engine via path KK. Account Information changes are stored within the database 33 via account configuration data input path KK.

Account Administration

An alarm system end user administers a Messenger System MS Account. A system administrator may also create, modify, and retrieve account

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information as stored in the Messenger System Database 33. Administration is performed upon a standard personal computer 1 with an industry standard Web Browser through the Internet 15 via an internet connection A. The end user or system administrator logs into a public web site (hosted on web site

5   because 30) using a password and login name provided by the security system installer. The web site 30 is exposed to the Internet 15 via a public IP address. Web pages are served by the web server 30 via the internet connection (from the web site 30 to the standard personal computer 1 via broadband or dial-up into Internet point-of-presence A, Internet 15, and

10 incoming Web based activity Z). Messenger System MS account information is stored within the Messenger System Database 33. Account information is requested by the web site 30 dynamic content engine via path KK. Account Information changes are stored within the database 33 via path account configuration data input KK.

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The administration function includes account information changes as well as selecting which Alarm Panel events need to be distributed by Messenger System and to whom the messages shall be distributed. Address Lists can be created and maintained which will allow easy distribution of events to multiple

20 recipients.

Event Generation

In most cases, a sensor of some form detects a change within the protected premises, however, a time occurrence may also trigger an event. The

25 occurrence of the Event 2, 5, 35, 37, 39, may be filtered respectively by the alarm panels 3, 6, 36, 38, 40, and possibly transmitted to a monitoring authority at the central-station. Each event may be a door opening or closing, system arming, system disarming, temperature change, moisture change, break-in, medical alarm, fire alarm or other event.

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Event Transmittal via Standard Dialer and Alarm Central Station Automati n Equipment

Historically, most alarm panels transmit event data to a monitoring authority via a standard telephone line and circuit. In this case, the alarm panel 12

uses a standard phone system with multiple incoming lines 21 to create a communication path with an industry standard alarm central station receiver 23. The events are communicated using frequency-shift-keying, touch-tone, or other tone patterns on the phone system via path I through 21 and path R.

5 The events are then routed to an operator in the central station who then makes a decision to dispatch emergency authorities to the premises. The automation system 31 then transmits a representation of the event via path HH to the Messenger System Services 29.

10 ### *Event Transmittal via Standard Dialer and Dedicated Central Station Alarm Receiver Equipment*

In this case, the alarm panel 12 uses a standard phone system with multiple incoming lines 21 to create a communication path with an industry standard alarm central station receiver 24. The events are communicated using

15 frequency-shift-keying, touch-tone, or other tone patterns on the phone system via path I through 21 and path S. The receiver 24 then transmits a representation of the event via path FF to a proxy system 32 that then forwards the event's representational form via path II to the Messenger System Services 29.

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Event Transmittal via Modem and Central Station Modem Reception Bank

In this case, the alarm panel 13 uses a standard phone system with multiple incoming lines 22 to create a communication path with an industry standard

25 modem 25. The events are communicated using frequency-shift-keying, touch-tone, or other tone patterns on the phone system via path J through 22 and path T. The modem 25 then transmits a representation of the event via path GG to a proxy system 32 that then forwards the event's representational form via path II to the Messenger System Services 29.

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Event Transmittal via AlarmNet-A

In this case, the alarm panel 40 communicates via NN to an AlarmNet-A transmitter 43. The events are communicated through the AlarmNet-A communication network to a matching AlarmNet-A receiver 16 and then via

path M to the AlarmNet-A Service handler. A representation of the events are then forwarded to the AlarmNet Routing Service 20 via path O. The Routing Service 20 then forwards the event's representational form via path DD to the Messenger System Services 29.

Event Transmittal via AlarmNet-M

In this case, the alarm panel 38 communicates via MM to an AlarmNet-M transmitter 42. The events are communicated through the AlarmNet-M communication network to a matching AlarmNet-M Service Handler 18 via the appropriate MobiText network carrier and the Internet via path K . Using path P, the AlarmNet-M Service Handler 18 sends a representation of the events to the AlarmNet Routing Service 20. The Routing Service 20 then forwards the event's representational form via path DD to the Messenger System Services 29.

Event Transmittal via AlarmNet-C

In this case, the alarm panel 36 communicates via LL to an AlarmNet-C transmitter and 41. The events are communicated through the AlarmNet-C communication network to a matching AlarmNet-C Service Handler 17 via the appropriate cellular network carrier and the Internet via path L. Using path O, the AlarmNet-C Service Handler 17 sends a representation of the events to the AlarmNet Routing Service 20. The Routing Service 20 then forwards the event's representational form via path DD to the Messenger System Services 29.

Event Transmittal via AlarmNet-I, Type I

In this case, the alarm panel 3 communicates via F to an AlarmNet-I transmitter 4. The events are communicated through the AlarmNet-I communication network via B to a matching AlarmNet-I Service Handler 28 via the Internet via path N. Using path CC, the AlarmNet-I Service Handler 28 sends a representation of the events to the AlarmNet Routing Service 20. The Routing Service 20 then forwards the event's representational form via path DD to the Messenger System Services 29.

Event Transmittal via AlarmNet-I, Type II

In this case, the alarm panel 3 communicates via F to an AlarmNet-I transmitter 4. The events are communicated through path C and the Internet,
5   then via path Y to the Messenger System Services 29.

Event Transmittal via Broad-Band Internet Connection

In this case, the alarm panel 6 communicates via G to an Ethernet-based network connection device 7. The events are communicated through the
10   Internet via path D.   Using path Y, a representation of the events is sent to the Messenger System Services 29 via path Y.

Event Transmittal via Dial-Up Internet Connection

In this case, the alarm panel 6 communicates via G to a modem-based
15   network connection device 7 and 14 via H. The events are communicated through the Internet via path E and a national internet provider such as AOL. Using path Y, a representation of the events is sent to the Messenger System. Services 29 via path Y.

20   ### *Messenger System Services Route Appropriate Messages to Recipients*

The Messenger System Services 29 use account information stored in the Messenger System Database 33, retrieved via path JJ, to determine which events must be forwarded and to which recipient(s) the events must go. In addition to determining possible recipients, the Messenger Services 29 may
25   transform the event's representation – textually or digitally – into the appropriate form for the recipient and the type of transport method used to deliver the message.

Message Transmittal Via Electronic Mail

30   If the Messenger System Services determine that an event must be transmitted to a recipient via E-Mail, a representation of the event is transmitted to a Simple Mail Transport Protocol Server 27 via path AA. The SMTP Server then formulates and outgoing E-Mail message and sends it through the Internet 15 via path X to the recipient's E-Mail Host Account on an

E-Mail pager, cell phone or Blackberry 8 via path V. The potential recipient may then retrieve E-Mails via a personal computer (with Internet Access), a cell phone (with the appropriate service), a pager (with the appropriate service), a BlackBerry device (with the appropriate service), or any other device that is capable of receiving E-Mail.

Message Transmittal Via Instant Message

If the Messenger System Services determines that an event must be transmitted to a recipient via an Instant Message, a representation of the event is transmitted to an Instant Messenger Client 26 via path BB. The IM Client then formulates an outgoing instant message and sends it through the Internet 15 via path W to the recipient's Instant Messenger Service Account via path U on a PC or cell phone 9. The potential recipient may then retrieve Instant Messages via a personal computer (with Internet Access), a cell phone (with the appropriate service), a pager (with the appropriate service), a BlackBerry device (with the appropriate service), or any other device that is capable of receiving Instant Messages.

The description of the preferred embodiment includes express reference to the Alarmnet family of communication services provided by Ademco group, Syosset New York for the security industry. It will be understood that the term communication service as used in the claims includes both the Alarmnet family of communication services as well as other services using wireless or Internet technologies.

The respective methods and systems in accordance with the present system may utilize a computer that includes a microprocessor and memory and which cooperates with software that is commercially available or within the skill of practitioners in the programming arts.

It will be obvious to those having skill in the art that many changes may be made to the details of the above-described embodiments of this invention without departing from the underlying principles thereof. Accordingly, it will be

appreciated that this invention is also applicable to other systems. The scope of this invention should, therefore, be determined only by the following claims.